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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,324	11/08/2001	Chidane Ouchi	684.3278	5125
5514	7590	11/14/2003	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			KIM, PETER B	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 11/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/986,324	Applicant(s) OUCHI, CHIDANE	
	Examiner Peter B. Kim	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments filed on Oct. 1, 2003 have been fully considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable
Hikima (4,952,945) in view of Eden et al. (Eden) (4,736,381).

Hikima discloses a projection exposure apparatus with a continuous emission excimer laser (100), an illumination optical system (302), and a projection optical system (304) made of single glass material (col. 1, lines 33-35). Hikima also discloses illuminating reticle with slit-like light and scanning means for scanningly moving the reticle and the substrate to expose the substrate (col. 4, lines 60-61). Hikima also discloses a wavelength detecting means (200) for detecting the wavelength of the laser light from the excimer laser light and a resonator length changing means (21) where a shifting means shifts mirror in resonator (col. 4, lines 24-26), a band narrowing element actuated on the basis of the wavelength detecting means (col. 3, lines 9-15). However, Hikima does not disclose a laser for injecting light of a predetermined wavelength into the resonator of the excimer laser. Eden discloses a laser (4) for injecting light of a predetermined wavelength into a resonator of the continuous emission excimer laser (1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention

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to provide the optically pumped laser of Eden to the invention of Hikima in order to obtain continuous emission with high energy efficiencies as taught by Eden in col. 2, lines 5-15.

Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hikima (4,952,945) in view of Eden et al. (Eden) (4,736,381) as applied to claim 1 above, and further in view of Tezuka et al. (Tezuka) (5,170,207).

The further difference between the claimed invention and the modified Hikima is that Hikima does not disclose half bandwidth of wavelength spectrum indicated in the claims or the projection optical system made from the material indicated in the claims. Tezuka teaches that ArF laser are a well known (col. 7, line 67 – col. 8, line 2), and using ArF inherently include lasers wherein a half bandwidth of a wavelength spectrum of the laser light is not greater than .1 pm and would allow an image of a linewidth of .13 microns. Tezuka also teaches F2 lasers are well known in the art (col. 7, line 67 – col. 8, line 2), KrF laser inherently include laser wherein a half bandwidth of a wavelength spectrum of the laser light is not greater than .08 pm and would allow an image of a linewidth of .09 microns. Tezuka shows in Fig. 3, a projection optical system that includes a lens system made up of plurality of lens designed to optimize exposure during lithographic process made with short wavelength lasers (abstract). Further it is disclosed that the lenses of the system of Tezuka should be made with SiO₂ or CaF₂ (col. 1, lines 40-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include the projection optical system of Tezuka in the modified apparatus of Hikima in place of the projection lens and to provide ArF and KrF lasers, in order to optimize the exposures

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performed with short wavelength lasers and to use different lasers recognized in the art as alternatives.

Response to Arguments

Applicant argues that the cited references do not teach continuous laser. However, applicant does not provide any support for the argument. The references do not seem to limit the teaching only to the pulsed laser systems. Also, as taught by Eden, it is well known that continuous or pulsed laser systems are provided by methods taught by the references.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The

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examiner can normally be reached on Monday-Thursday from 8:30 AM to 6:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703 308 2847. The fax phone numbers for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 306- 3431.



Peter B. Kim
Patent Examiner
November 7, 2003